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Supplemental Material

Polybrominated Diphenyl Ether Exposure and Thyroid Function Tests in North American Adults

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Table of Contents

Table S1. Spearman correlation coefficients between PBDE congeners at initial sampling round (47 serum samples).

Table S2. Results from general linear regression models evaluating the association between lipid-standardized PBDEs and thyroid function tests. (51 adults, 137 serum samples).

Table S3. Estimated ICCs and variance components for repeated serum markers of thyroid function tests.

Figure S1. Distribution of thyroid function tests: untransformed and natural log transformed: (A) Total T₄, (B) TSH, (C) Free T₄, (D) Total T₃.

Figure S2A-B. Unadjusted cross-sectional associations between BDE-47 and Total T₄ in Round 1: A) without outlier (N=46) B) with outlier (N=47)*.

Table S1. Spearman correlation coefficients between PBDE congeners at initial sampling round (47 serum samples).

	BDE-28	BDE-47	BDE-99	BDE-100	BDE-153
BDE-28	1.0	$r=0.92$ $p<0.0001$	$r=0.88$ $p<0.0001$	$r=0.85$ $p<0.0001$	$r=0.29$ $p=0.045$
BDE-47		1.0	$r=0.97$ $p<0.0001$	$r=0.96$ $p<0.0001$	$r=0.42$ $p=0.0033$
BDE-99			1.0	$r=0.95$ $p<0.0001$	$r=0.40$ $p=0.0054$
BDE-100				1.0	$r=0.47$ $p=0.0008$
BDE-153					1.0

Abbreviations: p (p-value), r (spearman correlation coefficient)

Table S2. Results from general linear regression models evaluating the association between lipid-standardized PBDEs and thyroid function tests. (51 adults, 137 serum samples).

TFTs	BDE-28 β (95% CI)	p	BDE-47 β (95% CI)	p	BDE-99 β (95% CI)	p	BDE-100 β (95% CI)	p	BDE-153 β (95% CI)	p
TT₄ (μg/dL)										
-15 (-54, 23)	0.43	-13 (-27, 0.57)	0.06	-34 (-81, 13)	0.16	-48 (-90, -6.7)	0.02	-12 (-31, 6.8)	0.21	
TSH ln(μIU/mL)^a										
47 (230, 130)	0.62	0.81 (-6.0, 7.6)	0.81	6.1 (-18, 30)	0.61	7.5 (-12, 14)	0.46	5.6 (-3.1, 14)	0.20	
fT₄ ln(ng/dL)^a										
2.9 (-46, 51)	0.91	-0.57 (-2.3, 1.2)	0.53	-3.7 (-9.8, 2.5)	0.24	2.5 (-2.6, 7.5)	0.33	3.0 (0.87, 5.0)	0.01	
TT₃ ln(ng/mL)^a										
6.1 (-44, 56)	0.81	0.15 (-1.7, 1.9)	0.87	1.4 (-5.3, 8.0)	0.68	-1.3 (-6.4, 3.8)	0.62	-1.5 (-3.7, 0.70)	0.18	

Abbreviations: β (beta-estimate), CI (confidence interval), fT₄ (free thyroxine), p (p-value), TFTs (thyroid function tests), TT₃ (total triiodothyronine), TT₄ (total thyroxine), TSH (thyroid stimulating hormone)

a Dependent variable was natural log-transformed for regression analysis.

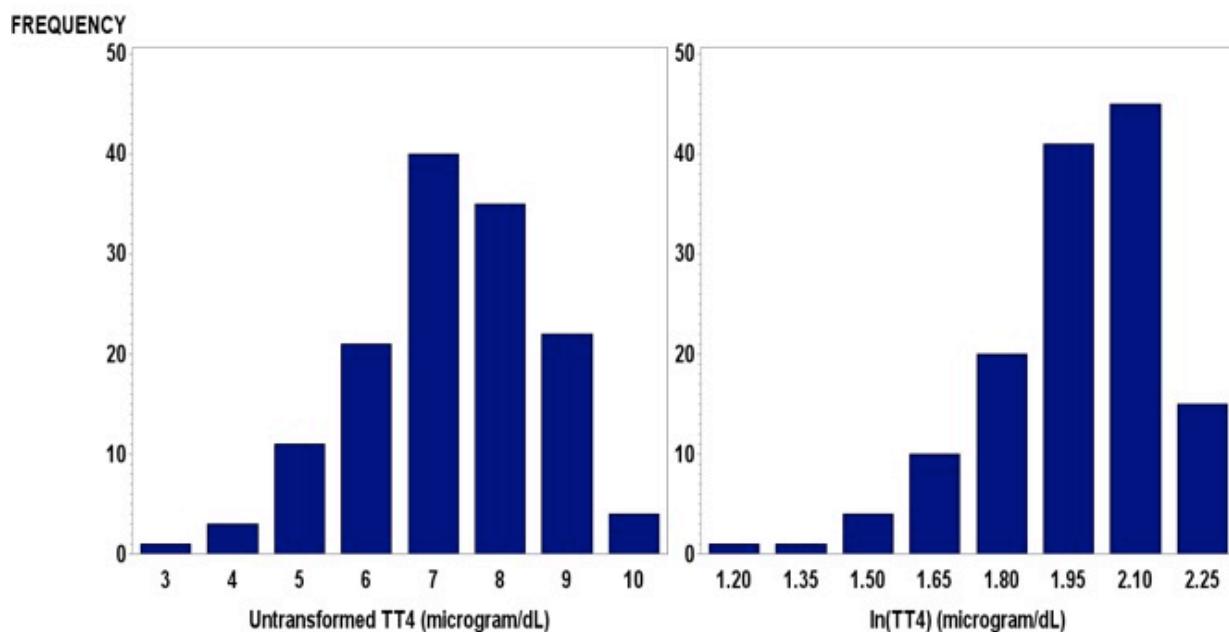
Table S3. Estimated ICCs and variance components for repeated serum markers of thyroid function tests.

Metrics	TSH ($\mu\text{IU/mL}$) Estimate (95% CI)	TT ₄ Estimate (95% CI)	fT ₄ Estimate (95% CI)	TT ₃ Estimate (95% CI)	UIC Estimate (95% CI)
ICC	0.72 (0.56, 0.78)	0.80 (0.68, 0.85)	0.69 (0.53, 0.77)	0.56 (0.39, 0.67)	0.38 (0.19, 0.50)
σ^2_w	0.11 (0.09, 0.2)	0.36 (0.3, 0.5)	0.0075 (0.006, 0.01)	0.012 (0.009, 0.02)	0.38 (0.29, 0.53)
σ^2_B	0.28 (0.2, 0.4)	1.4 (0.8, 2.0)	0.017 (0.009, 0.03)	0.015 (0.007, 0.03)	0.23 (0.077, 0.38)

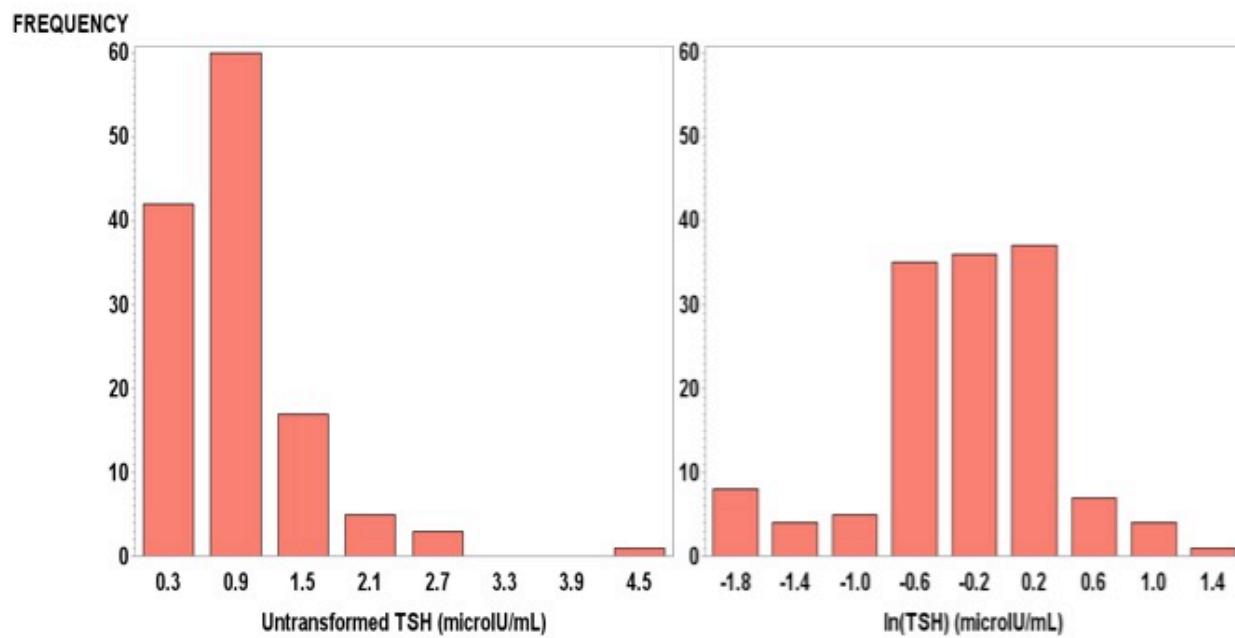
Abbreviations: ICC (intraclass correlation coefficient), TSH (thyroid stimulating hormone), TT₄ (total thyroxine), fT₄ (free thyroxine), TT₃ (total triiodothyronine), UIC (urinary iodide concentration), σ^2_w (within subject variability), σ^2_B (between subject variability)

Figure S1. Distribution of thyroid function tests: untransformed and natural log transformed: (A) Total T₄, (B) TSH, (C) Free T₄, (D) Total T₃.

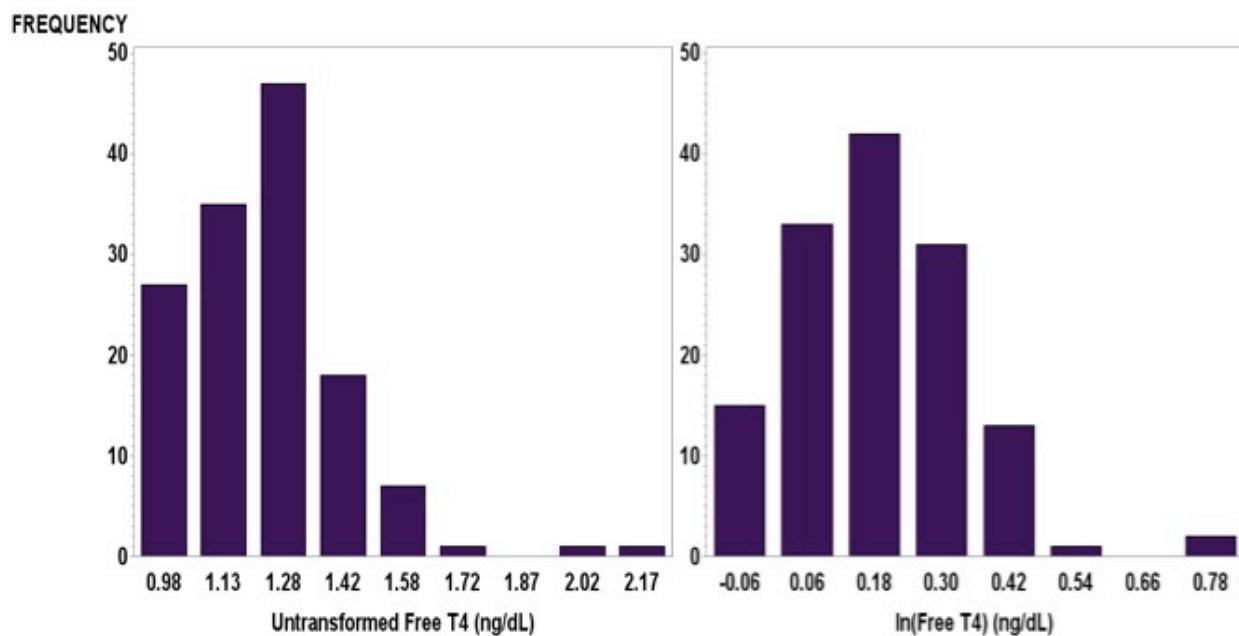
A.



B.



C.



D.

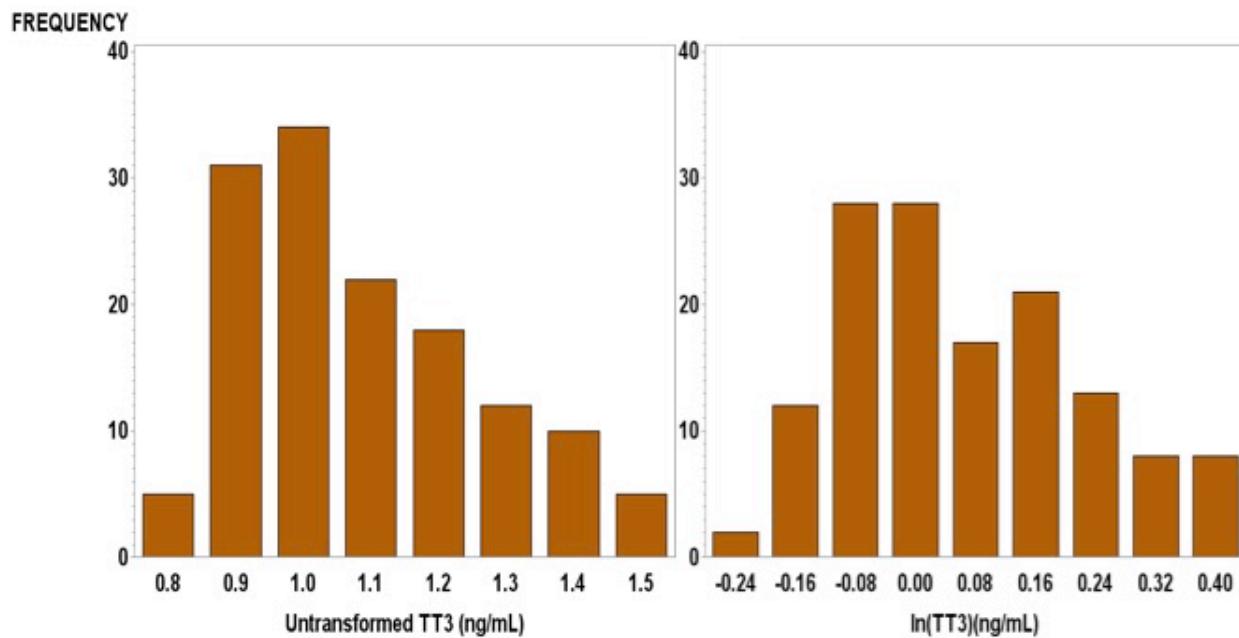
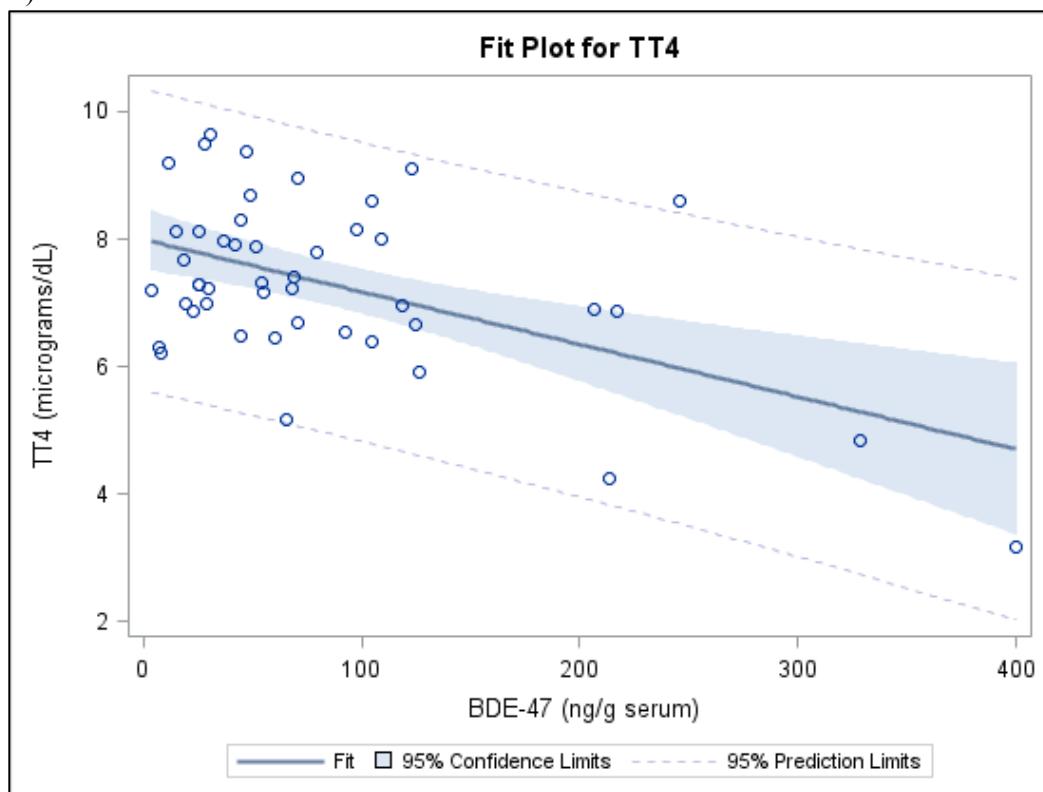
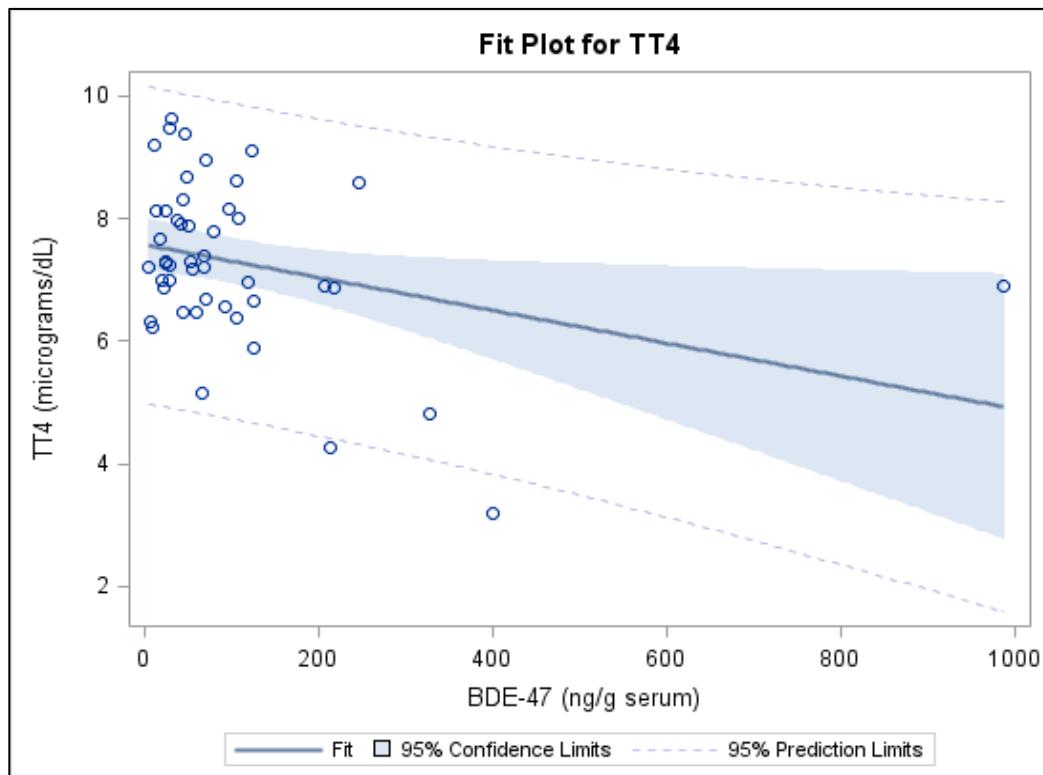


Figure S2A-B. Unadjusted cross-sectional associations between BDE-47 and Total T₄ in Round 1: A) without outlier (N=46) B) with outlier (N=47)*.

A)



B.



A) Relationship between BDE-47 and Total T₄ in Round 1 without outlying participant (N=46) ($\beta=-8.2$, 95% CI: -12.3, -4.1). B) Relationship between BDE-47 and Total T₄ in Round 1 with outlying participant (N=47) ($\beta=-2.7$, 95% CI: -5.1, -0.27). * Outlying participant was a 64 year old, non-Hispanic white male.